



LIVESTOCK CONSERVATION INSTITUTE

LIVESTOCK HANDLING GUIDE

*Management Practices
that Reduce Livestock
Bruises and Injuries, and Improve
Handling Efficiency*

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About Livestock Conservation Institute: Livestock Conservation Institute is a non-profit association organized in 1916 to address the problems and opportunities of controlling and eradicating livestock diseases and improving livestock handling procedures. LCI's membership consists of over 180 highly respected companies and organizations from throughout the United States and Canada involved in the livestock industry. Its objective is to develop practical solutions to the health and handling needs of the livestock industry.

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LIVESTOCK HANDLING GUIDE

By Temple Grandin

Chairman, Livestock Handling Committee

Handling Stress

Excessive stress during handling lowers livestock productivity. Gentle quiet handling reduces stress. Reducing stress is important because handling stresses can lower weight gain, reduce reproductive performance, and immune function (ability to fight disease).

Livestock have long memories. If animals are handled roughly they will remember the rough handling experience and be more stressed when they are handled in the future. Livestock which are handled gently will be calmer and less stressed the next time they are handled. Good stockmanship will improve the bottom line.

Understanding Animal Psychology Can Help Reduce Stress and Bruises

Vision — Cattle, hogs, and sheep have wide-angle, panoramic vision, which enables them to see behind without turning their heads.

Lighting in livestock handling facilities should be even and diffuse and sharp contrasts should be avoided.

Livestock are likely to spook or balk at the following and they should be eliminated, if possible: shadows, water puddles, drain grates, shiny objects such as car bumpers, flapping objects, coats on fences, dogs, a bright spot of sunlight coming through a hole in the roof.

When loading livestock at night, put a light inside the truck, but avoid bare bulbs that glare in the eyes of the animals. Light up dark places you are driving livestock into.

Avoid facing squeeze chutes and loading or unloading ramps into the sun.

Load confinement hogs at night, if possible, because they are reluctant to come out into the bright sunlight. For easier daytime loading, put a shade over the loading ramp.

Hearing and Smell — When hogs are being unloaded, spread some of the truck bedding on the crossover of the ramp to entice them out of the truck. The bedding covers the strange smell of the ramp.

Wash blood off restraining chutes in order to reduce balking of cattle.

Don't yell and scream at livestock. Their ears are more sensitive than ours. Shaking a plastic garbage bag will move cattle easily and playing music can help to calm animals. Loud noise stresses livestock.

Put rubber bumpers on clanging gates and fix air leaks in pneumatic gates or truck brake lines to reduce balking. Air exhausts should be piped away from the animals.

Herd Behavior — Let animals follow the leader at their own pace and they will seldom injure themselves.

Don't leave a single steer, heifer or cow by itself. It is likely to injure itself trying to jump a fence in an attempt to rejoin its herdmates. A single animal can be very dangerous to the handler. If it won't go where you want it to go by itself, put some other cattle in with it and move the whole group.

Different breeds of livestock react differently. For example, Brahman cattle are more excitable than the English breeds.

Confinement hogs move more slowly than hogs raised on dirt. Don't rush them.

Flight Distance — Take flight distance into consideration in handling all livestock. (Figures 1 and 2) When you penetrate the animal's flight zone, it will move away. The size of the flight zone varies, depending on the wildness or tameness of the animal. Feedlot cattle have a flight zone of about 5 feet, whereas wild range cattle will run when you get within 100 feet of them.

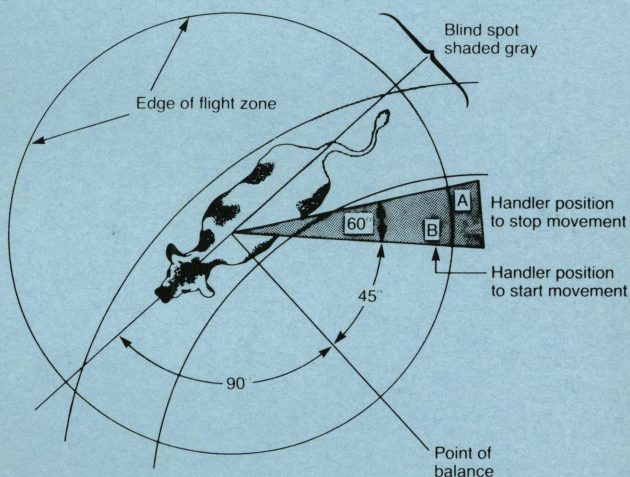


Figure 1: Handler positions for driving a single animal most efficiently.

You can move animals most easily with a minimum of excitement if you position yourself on the boundary of the flight zone, as shown in Figure 1. The letters A and B indicate the correct positions for you to stand to move an animal forward. If you move in front of the point of balance the animal will back up. If you penetrate the flight zone too deeply, the animal will attempt to get away, either by running from you or turning back and running back past you. When you are moving cattle in an alley, you must **RETREAT** and **BACK UP** if one attempts to turn back. You have to get out of the flight zone. If an animal starts rearing up in a single file chute, step back and get out of its flight zone.

Cattle and sheep have a natural tendency to circle around the handler and keep you in view at all times.

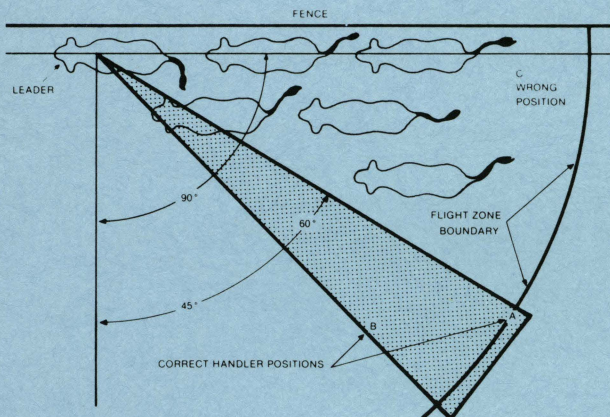


Figure 2: Handler positions for moving a group of cattle most efficiently along a fence.

Figure 2 shows the most efficient positions for the handler when moving livestock along a fence. You should stay in position A or B. If you move into position C you will turn the animals away from the fence. The most effective position is to stand at an angle behind the animals, rather than directly behind them.

Handling Facility Design Tips

Install solid fences in single-file chutes, crowding pens and loading chutes, to block out outside distractions. The crowd pen gate should also be solid. However, sliding gates and one-way gates in single file chutes and loading chutes should be constructed so the animals can see through them, in order to take advantage of following behavior.

Install man gates in cattle facilities in solid fence areas for handler safety.

In alleys and other areas where cattle are handled, the fences should be made from substantial materials. If cable or thin rods are used, install a wide belly rail that the animals can see.

A curved chute works better than a straight chute for two reasons:

1. It prevents the animals from seeing the truck or restraining chute, until they are part way up the chute.

2. It takes advantage of the tendency of cattle and sheep to circle around the handler. Catwalks should be installed on the inner radius. Catwalks should run alongside the fences, not overhead.

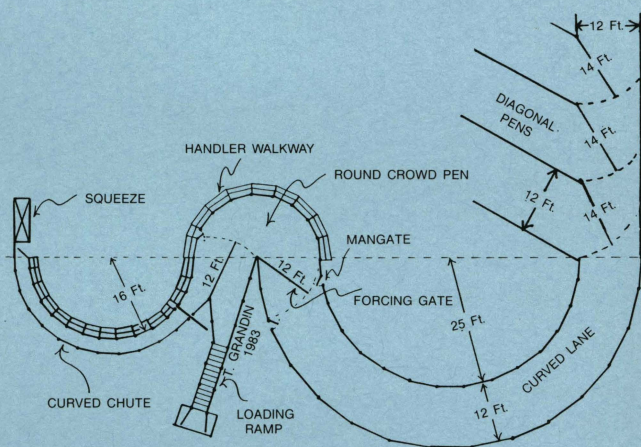


Figure 3: The layout shown in Figure 3 can be used for handling cattle on both ranches and feedlots. The curved single file chute, round crowd pen and wide curved lane are more efficient than a straight chute. This system is easy to lay out. It consists of three half circles laid out along the layout line. The diagonal pens are on a 60 degree angle and they can be used for sorting or holding cattle awaiting shipment. The pens are 12 ft. wide with 14 ft. gates. The pen gates are 2 ft. longer than the drive alley to eliminate a sharp 90 degree corner. To avoid bunching, the pens should not exceed a length of 80 feet.

Bruises

Enough meat to feed a large city is thrown into the rendering tank as a result of bruised livestock carcasses. Bruised meat cannot be used for human food. The livestock industry is losing \$46 million annually from bruises on cattle and hogs.

When animals are handled roughly, as much as \$100 is lost on each 100 head of fed cattle or 200 butcher hogs.

CATTLE

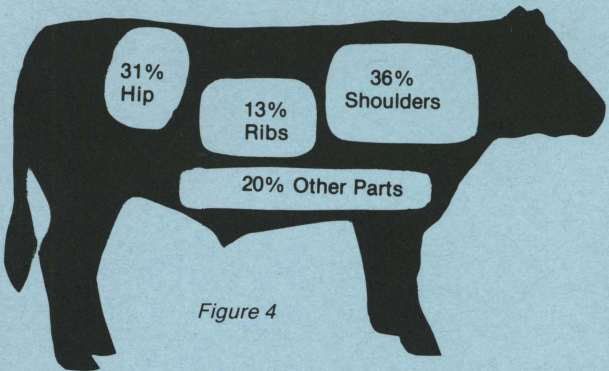


Figure 4

Note in Figure 4 that 31 percent of all cattle bruises occur in the valuable loin (hip) area.

A recent LCI survey in large beef packing plants indicated \$57 in losses from bruising for every 100 head of fed cattle marketed.

Ranchers and other producers who market young stock should also be interested in reducing bruising, because bruises and injuries lower animal performance.

Two-thirds of all loin bruises occur during loading and unloading from trucks. Each severe loin bruise results in a \$20 carcass discount. Of each 100 head marketed, 7 to 9 head had severe bruises.

Thin cows bruise more easily than choice steers. Cattle which go through stockyards have more bruises than cattle sold directly to the plant. In one survey, cattle sold on a live weight basis had twice as many bruises, compared with cattle sold on the rail. Producers who sell on the rail have the bruises discounted from their payment, since the bruises are trimmed away before the carcass is weighed.

HOGS

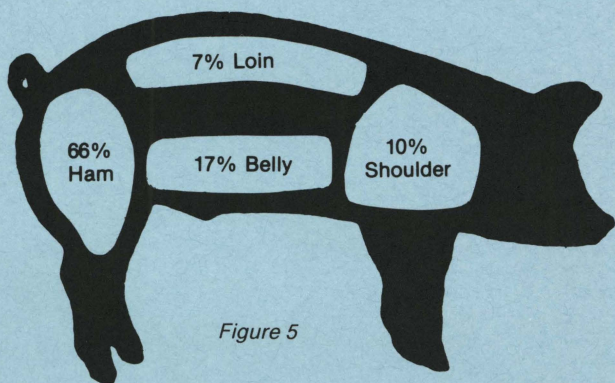


Figure 5

Note that 66 percent of all hog bruises occur in the valuable hams (Figure 5)

Both hams may be ruined, requiring that they be trimmed and discarded, if a hog falls and does the “splits” (spreader injury).

SHEEP

More than a fourth of all lamb bruises (27%) occur on the leg, while 17 percent occur on the loin. Ten percent of all fed lambs have carcass damage.

The most common cause of bruising is grabbing sheep by the wool or by the hind leg. Use a Judas goat or a “pet” sheep to lead them.

Cause, Preventing Bruises

A bruise results from a blood vessel hemorrhaging under the hide. The outside of the animal can appear normal even when there is a large injury under the hide. Contrary to popular belief, an animal can still be bruised after it is stunned at the packing plant, up until the time it is bled.

The most common cause of cattle bruises is a hard bump against a protruding object or horns. Objects with a sharp edge such as an angle iron are most likely to bruise. Hog bruises are most often caused by kicking in the ham or hitting them with canes or clubs.

More than 50 percent of all bruises are caused by rough, careless handling. Don't rush livestock. Let them follow the leader and move at their own pace. Rough handling during loading at the feedlot of origin was the major cause of bruises in one survey.

CATTLE

Horns — Groups of horned cattle have more bruises than groups of hornless (polled) cattle. Tipping will not reduce bruising. The horn button should be removed from young calves or you should breed polled cattle. Overcrowding horned cattle on a truck will greatly increase bruising.

Gates — A common cause of loin bruises is throwing a gate into the side of an animal. A bruise will result if the animal becomes wedged between the end of the gate and the fence. Tie-backs should be installed on all gates, to hold them flush to the fence. Sagging gates should be repaired.

Protruding Objects — Broken boards, nails and exposed bolts should be eliminated. Check facilities by looking for shiny, rubbed spots or tufts of hair. These indicate areas where cattle are bumping. Vertical sliding gates should be padded on the bottom with large diameter hose. Corners can be padded by cutting strips from old tires or conveyor belting.

Fencing — Planks, sheet metal or other fencing materials should be installed on the side of the posts toward the cattle. If animals are being handled on both sides of the fence, install a belly rail to prevent them from catching hips on the posts.

Bruise Hazard Zone — The area from 28 inches to 52 inches from the floor is the hazard zone.

Flooring — Provide good footing. In new facilities with concrete floors, in areas where cattle are handled, score the concrete in an 8 inch diamond pattern with grooves at least an inch deep. In exist-

ing facilities roughen the concrete with a jack-hammer or install a grid made from 1 inch steel bars. The grid works well on scales and in front of the squeeze chute.

Trucks — More bruises occur in semi-trailers which load through the side, compared with trailers which load through the rear. Bruises occur when the cattle strike the door frame while making the 90 degree turn to exit from the trailer. Bruises in this type of trailer can be reduced by replacing the standard 30-inch door with a 42-inch door which is tapered, making the opening smaller at the bottom. This forces the animal to walk through the center of the door and prevents catching a hip.

HOGS

Persuaders — A canvas slapper is the best tool for moving hogs. In cold weather make sure the slapper is not frozen. A rough handler who kicks a hog in the ham can ruin the ham. Let hogs move at their own pace in order to avoid damaging pile-ups. Electric prods should be used sparingly. Never hit hogs with canes or clubs.

Gates — All gates should have tie-backs and the latch should be on the top of the gate to prevent bruising. A hog gate should be hung no more than 4 inches off the floor to prevent injuries. Articulated gates which fold in the middle are handy for crowding hogs.

Bruise Hazard Zones — The hazard zone for bruises is the area between 12 inches and 30 inches from the floor.

Flooring — Provide good footing. A spreader injury can completely ruin both hams. In new handling facilities with concrete floors, a very rough broom finish is best, or tamp the wet concrete with an expanded steel tamp.

Trucks — Be especially careful when you load or unload hogs from double decker semi-trailers designed for cattle. Hogs will pile up and fall down the internal ramps in these trailers if rushed. If at

all possible, load and unload the hogs from the top decks through a high chute, which enables them to walk straight on or off.

Loading Chute Recommendations

All Species

Permanently installed loading ramps should have no more than a 20 degree slope.

Portable or adjustable loading ramps should have no more than a 25 degree slope.

All permanently installed loading ramps should have a flat landing at the top, so the animal has a flat surface to walk on before entering or after exiting from the truck. This should be a minimum of 5 feet long for all cattle ramps and for hog ramps at packing plants and stockyards. The flat landing should be at least 3 feet long for hog ramps on the farm.

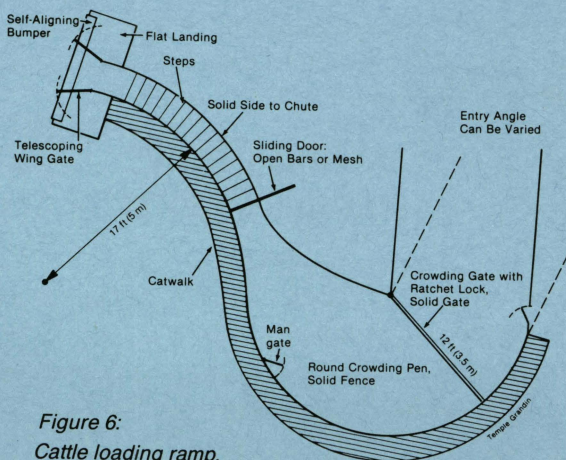
A staircase ramp with 12 inch tread width and 3 1/2 to 4 inch rise on each step is best for permanently installed ramps. Portable or adjustable ramps should have cleats spaced 8 inches apart. Cleat dimensions should be 1 1/2 by 1 1/2 inches.

Ramps should have solid sides to block out distractions from outside the chute, which may spook the animals.

A self-aligning dock bumper or bull board (crossover-bridge) is needed to bridge the gap between the chute and the truck. The chute should also have telescoping side gates or panels which fit against the truck to prevent animals from jumping out through the gap.

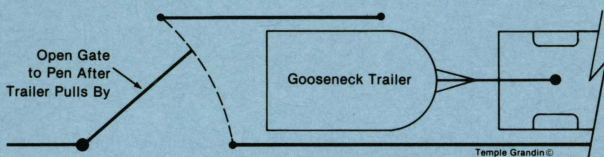
Cattle loading ramps should be curved (See figure 6), or have a 15-degree bend and should be only wide enough to permit cattle to walk single file.

Ramps used for unloading only, either cattle or hogs, should be 6 to 10 feet wide, to provide a clear path to freedom. These ramps should NEVER be used for loading livestock.

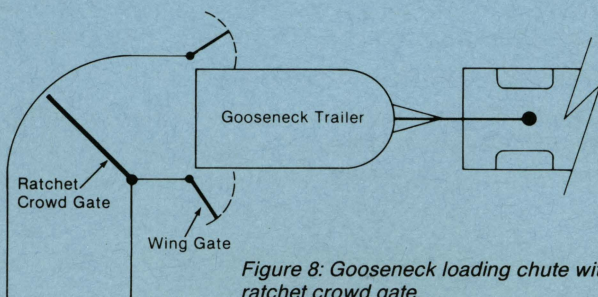


*Figure 6:
Cattle loading ramp.*

Simple loading or unloading facilities for low gooseneck trailers are illustrated in Figures 7 and 8.



*Figure 7: Drive-through chute for unloading
cattle from gooseneck trailer.*



*Figure 8: Gooseneck loading chute with
ratchet crowd gate.*

Sources For Bruise Data

LCI Carcass Damage Fax
F. Blecha, Kansas State University
T. Grandin, observations throughout U.S.
G.D. Hutson, Australia
H.R.C. Meischke, Australia
P.H. Hemsworth, Australia
J.E. Rickenbacker, USDA
J.C. Rosse
A. Sabinson, Oscar Mayer, Wisconsin
F.D. Shaw, Australia
S.L. Stubbs, Karler Packing Co., New Mexico

Other LCI Information

A companion publication, "Livestock Trucking Guide", by the same author, is available from Livestock Conservation Institute. It covers the extent of bruise losses to cattle, hogs and sheep; causes and prevention of bruising; loading chute recommendations; animal psychology and handling facility design tips.

Single Copies are available at no charge. Send a self-addressed envelope containing first class postage (one ounce) to:

Livestock Handling pamphlet
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Slide Sets Video Tape on Livestock Handling Available Through LCI

Slide sets on Cattle Handling and Hog Handling, prepared by the Handling Committee of LCI, are available with narratives or cassette tapes. A new video on cattle handling is also available.

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